"UNEMPLOYABILITY"
A BIGGER PROBLEM THAN UNEMPLOYMENT

My Standards?

Successful people are not the ones with the **HIGHEST GOALS** – they are the ones with the **HIGHEST STANDARDS**.

Classroom Standards

Students do not set class parameters

Class parameters are set by:
The College
The Department
The Instructor
How the class is run is defined by:
Pre-class eMails
The Lecture / Lab Syllabus
Lab / Lecture Procedures
Other Documents in Course Information Folders
First Day Slide Set

Standards are set to provide the best possible outcome for all students
Standards are based on the best, current data available
Remote class standards will differ from on-campus classes
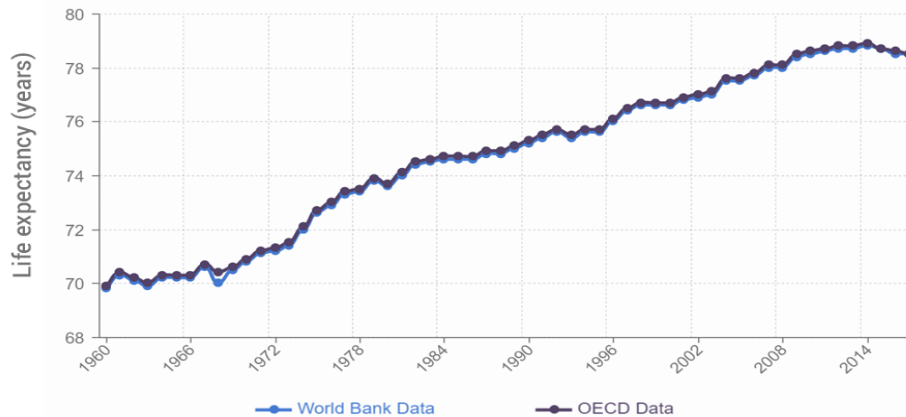Standards typically provide more than 80 % A+ B's (~90% on-campus)

Concerns expressed by the instructor are based on data …

US Life Expectancy Started Declining in 2014

United States life expectancy at birth
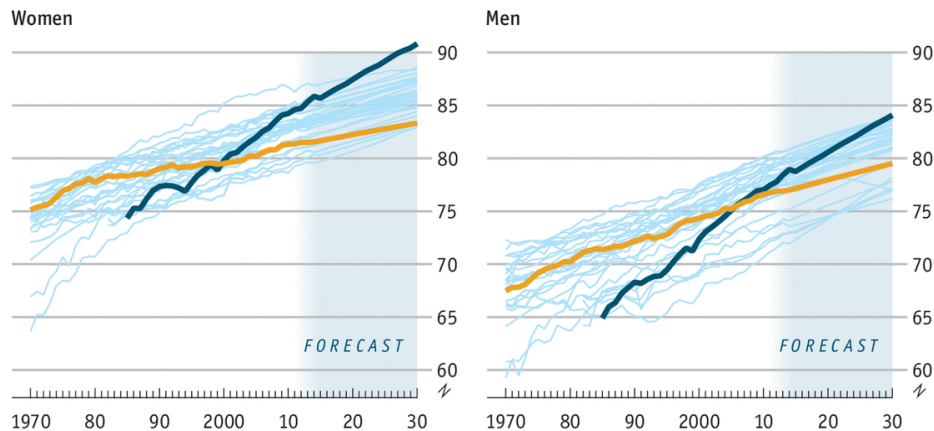### (1960-2017) Average age for male and female

Source: OECD / World Bank Data — Simply Insurance

Live long and prosper
Life expectancy at birth in selected rich countries, years

US — South Korea — Others

Source: "Future life expectancy in 35 industrialised countries", by M. Ezzati *et al*. The *Lancet*, February 2017

Economist.com

Similar Countries Ranked by Life Expectancy	
Country Name	2021 Life Expectancy
Hong Kong	85.03
Japan	84.79
Macao	84.42
Switzerland	83.97
Singapore	83.80
Spain	83.74
Italy	83.71
Australia	83.64
Channel Islands	83.30
Iceland	83.22
South Korea	83.21
Israel	83.19
Sweden	83.03
France	82.86
Malta	82.75
Canada	82.66
Norway	82.64
Ireland	82.51
New Zealand	82.50
Netherlands	82.49
Greece	82.47
Luxembourg	82.47
Portugal	82.29
Finland	82.14
Belgium	81.86
Austria	81.77
Germany	81.57
Slovenia	81.54
United Kingdom	81.52
Cyprus	81.21
Denmark	81.11
Taiwan	80.70
Qatar	80.45
Chile	80.43
Puerto Rico	80.35
Guam	80.35
Barbados	79.39
Curacao	79.10
United States	**78.99**
Poland	78.95
Estonia	78.89
Panama	78.76

Gallop World Poll 2020 – Happiest Nations

1. Finland
2. Iceland
3. Denmark
4. Switzerland
5. Netherlands
6. Sweden
7. Germany
8. Norway
9. New Zealand
10. Austria
11. Israel
12. Australia
13. Ireland
14. United States
15. Canada
16. Czech Republic
17. Belgium
18. United Kingdom
19. China
20. France

Correct Measurements Are Not Trivial
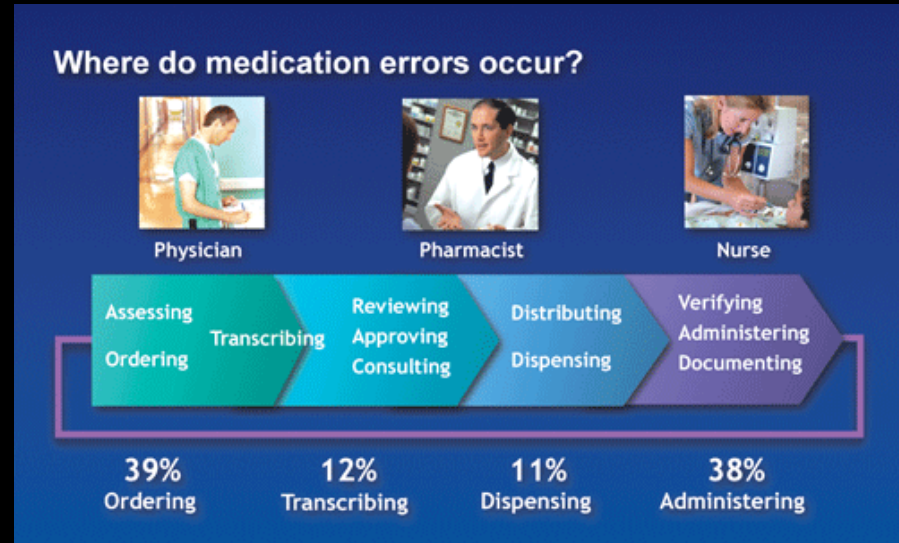
Improper Measurements / Calculations Can Cost Lives
1990: ~ 98,000 deaths from hospital errors
2016: > 440,000 deaths from hospital errors
Third Leading Cause of deaths in the US
~ 1.7 million non-fatal injuries
Not reading / following procedures can be lethal

Polo Vaccine Disaster

Polio (infantile paralysis) was once a major crippling disease
The success of the vaccine was a major US triumph
Superb example of a cooperative nation ending a major illness

40,000 children severely ill
51 children paralyzed
5 children killed

The vaccine was supposed to be prepared using killed virus
One batch (120,000 doses) mistakenly used live virus
Preparation skipped the virus killing step

Correct Measurements Are Not Trivial

15 million doses lost:
Employees mixed wrong ingredients
$ 150 million loss

Hubble Space Telescope:
Mirror surface shape
Curve Off by 1.3 mm
(Billions $ to repair)

Mars Orbiter:
One group in km/sec
Another group in mi/hr
Orbiter Crashed:
$125 million for the orbiter

LPT

Correct Measurements Are Not Trivial

French Rail System
2000 trains too wide for
1300 Stations

Warship VASA
Builders used different length measures
Sank 20 minutes into maiden voyage

Laufenberg Bridge across Rhine
Swiss-German
Measured sea level from different point
54 cm height difference when they met

LPT

Correct Measurements Are Not Trivial

Spain's S-80 Sub (2003)
Misplaced decimal in specifications
770 tons too heavy
Added length to compensate for too heavy
Result: too long to fit naval base
1 billion Euro total cost / per sub
More than twice original cost

Disney Japan Space Mountain
Error in length conversion
Wrong axle size
Cars derailed
1 dead, 10 injured

LPT
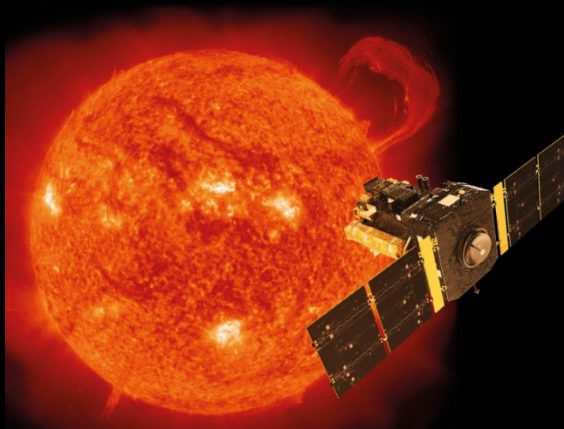
Correct Measurements Are Not Trivial

Sochi Biathon Track
40 m too short

Amsterdam Subsidies to the poor
Sent out € 188 million instead of 18.8

SOHO satellite lost communications
Improper Metric to English conversions

Gimli Glider
Ran out of fuel @ 40,000 feet
Wrong units for fuel calculation

Cost of healthcare

Percentage of GDP (2013) compared with life expectancy (2013)
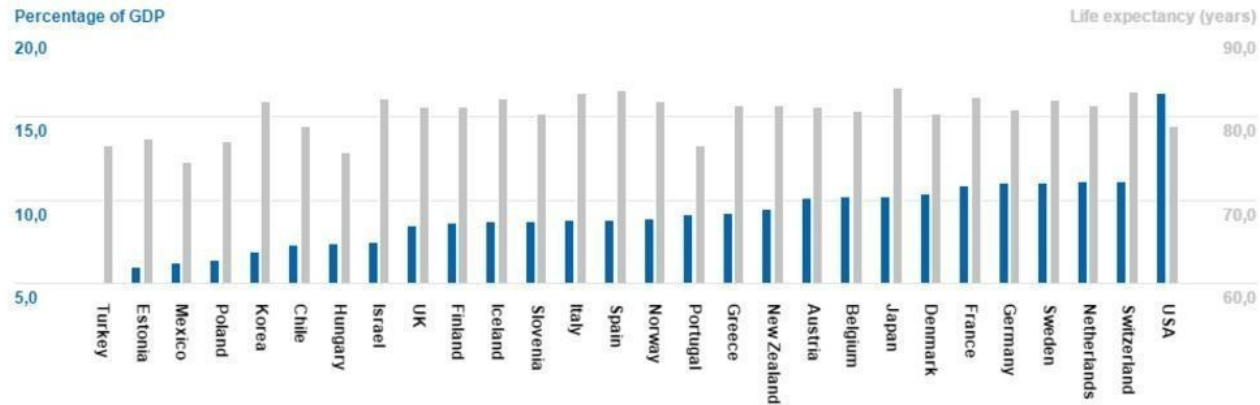
Source: OECD

ANNUAL PER CAPITA HEALTHCARE COSTS BY AGE
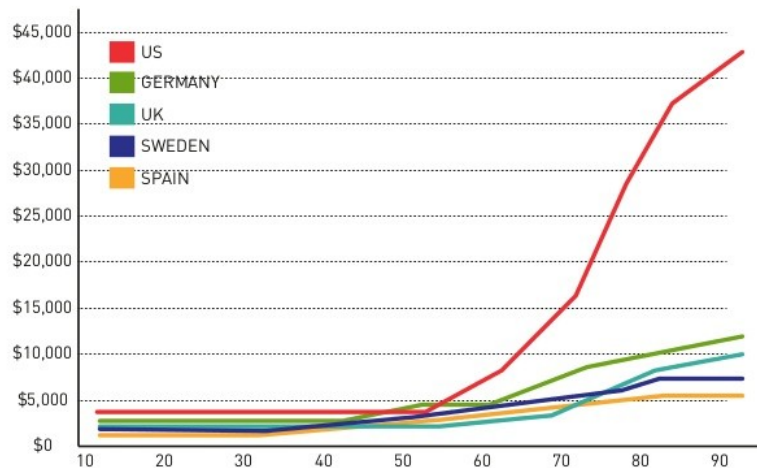
Source: Paul Fischbeck, Carneige Mellon University, James Hilston/ Post Gazette, 2009

Projected Growth In Population With Chronic Conditions, 2013-25
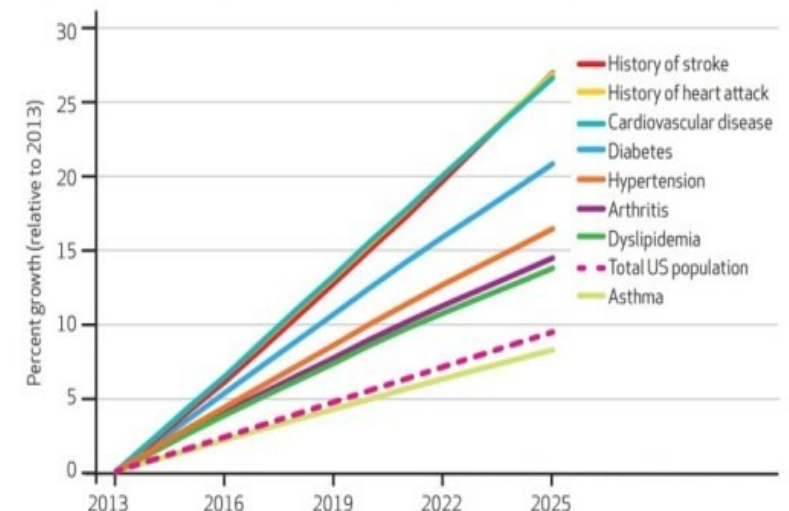
Source: Timothy M. Dall, Paul D. Gallo, Ritasree Chakrabarti, Terry West, April P. Semilla and Michael V. StormAn Aging Population And Growing Disease Burden Will Require A Large And Specialized Health Care Workforce By 2025 Health Affairs, 32, no.11 (2013):2013-2020

America's Infrastructure Report Card

2017 Infrastructure Grades

✈ AVIATION	D		🌲 PARKS AND RECREATION	↓ D+
🌉 BRIDGES	C+		🚢 PORTS	↑ C+
DAMS	D		🚊 RAIL	↑ B
🥛 DRINKING WATER	D		🛣 ROADS	D
💡 ENERGY	D+		🏫 SCHOOLS	↑ D+
HAZARDOUS WASTE	↑ D+		🗑 SOLID WASTE	↓ C+
INLAND WATERWAYS	↑ D		🚌 TRANSIT	↓ D-
LEVEES	↑ D		WASTEWATER	↑ D+

America's Cumulative Infrastructure Grade

D+

A	EXCEPTIONAL
B	GOOD
C	MEDIOCRE
D	POOR
F	FAILING

https://infrastructurereportcard.org/

International Math Performance 2018

Mathematics performance (PISA) Boys / Girls, Mean score, 2018   Source: PISA: Programme for International Student Assessment
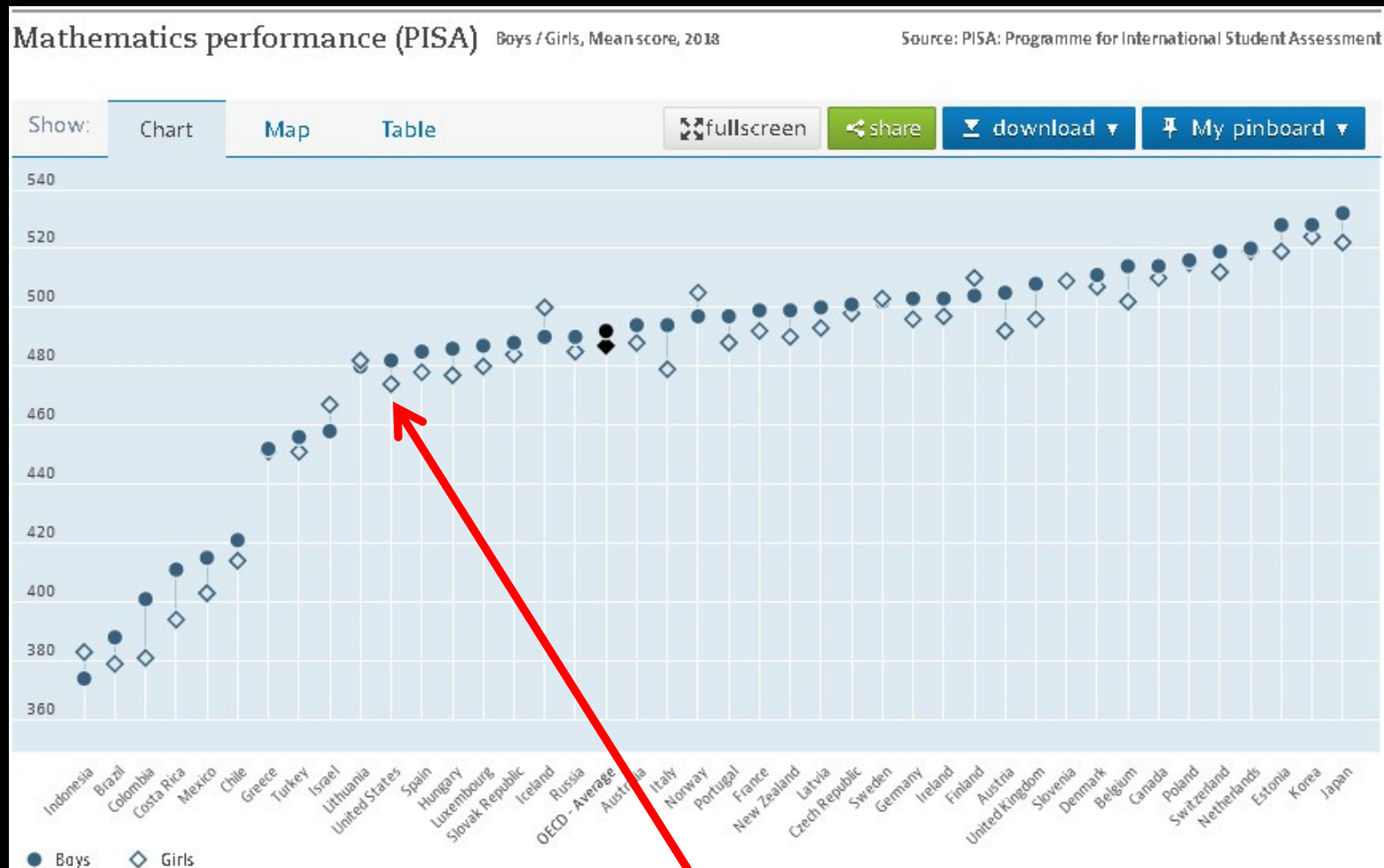
United States = 31st place

https://data.oecd.org/pisa/mathematics-performance-pisa.htm

Comments From A Master Educator

The Great Courses

Topic Professional

Subtopic Education

The Art of Teaching: Best Practices from a Master Educator

Professor Patrick N. Allitt
Emory University
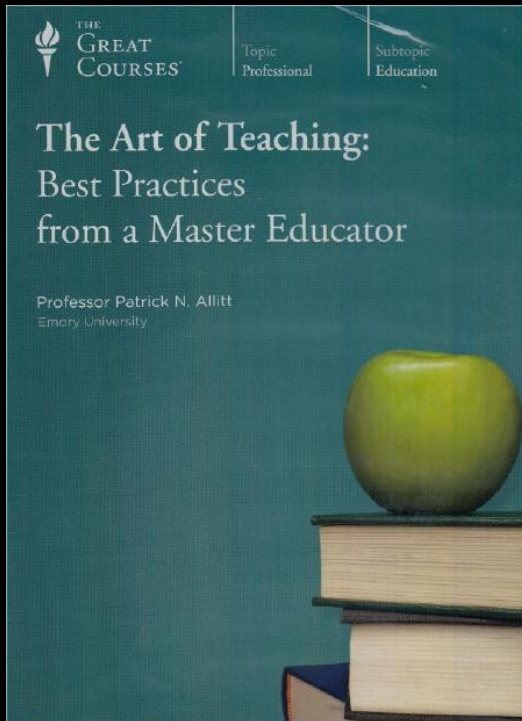
2010

American education is dysfunctional and it won't be fixed until we face the facts

No correlation between money spent and the quality of education … it depends primarily on student motivation

Information / facts change rapidly, so students need to be able to find information, process it and then examine it critically.

NEVER STOP LEARNING!

From Pew Research: 2017

FEBRUARY 15, 2017

U.S. students' academic achievement still lags that of their peers in many other countries

BY DREW DESILVER

Internationally, U.S. stands in middle of pack on science, math, reading scores

Average scores of 15-year-olds taking the 2015 Program for International Student Assessment
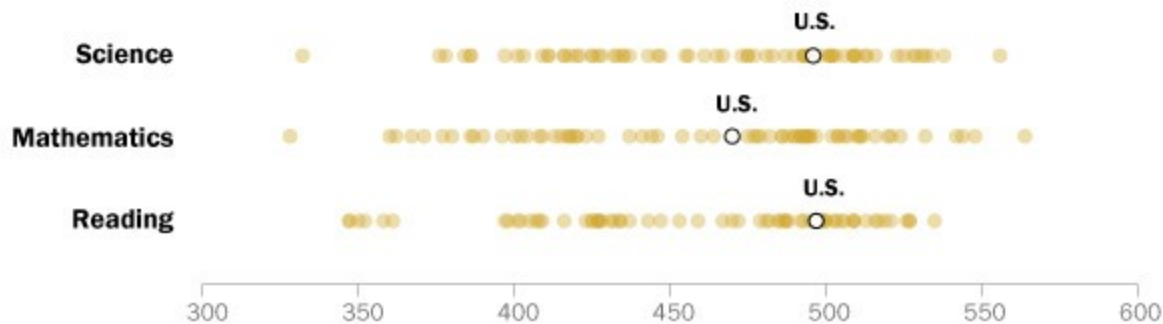
Note: Scale ranges from 0-1,000. Results from China not included because only four provinces participated in PISA 2015.
Source: OECD, PISA 2015

PEW RESEARCH CENTER

Michigan ACT Scores
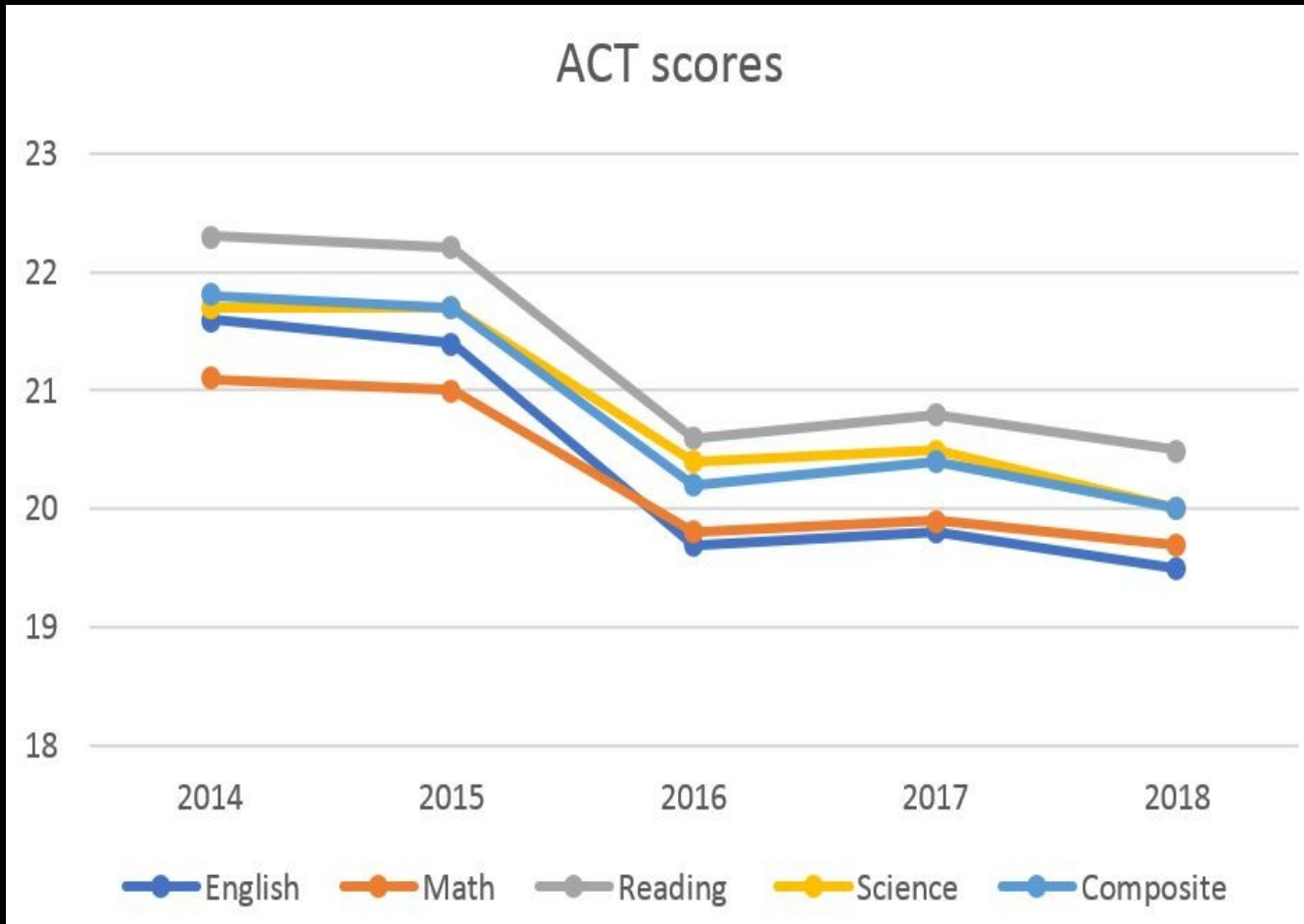
**80% MI High School Students
Can't pass college entrance exams**
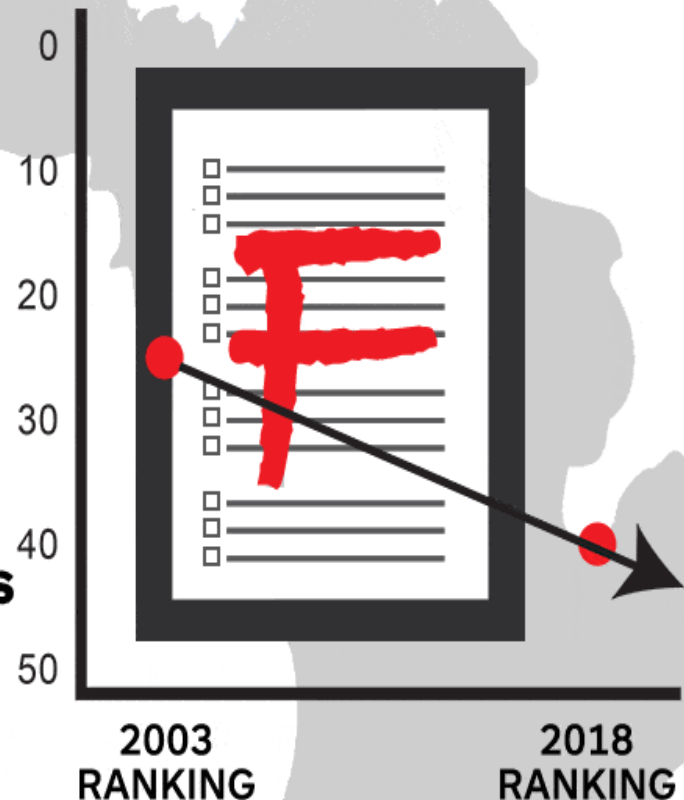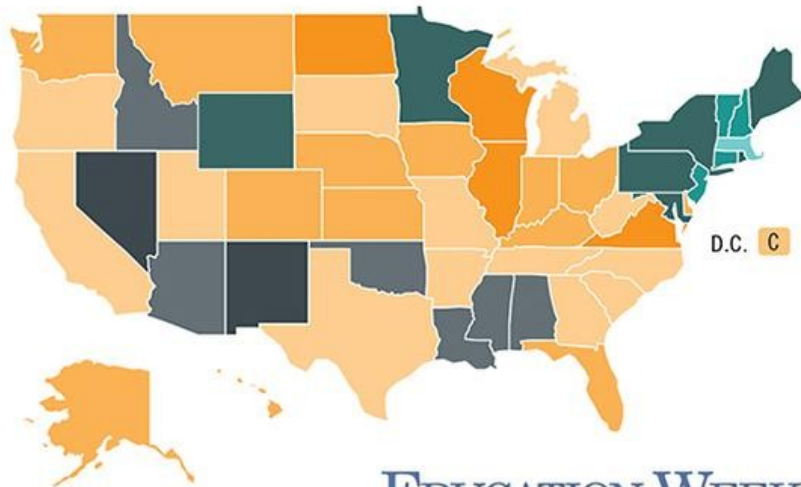
PISA 2018: The Top Rated Countries

Sum of mean science, reading and mathematics scores from the OECD PISA Results 2018*

Country	Score
China**	1,736
Singapore	1,669
Estonia	1,576
Japan	1,560
South Korea	1,559
Canada	1,550
Finland	1,549
Poland	1,539
Ireland	1,514
United Kingdom	1,511
Slovenia	1,511
New Zealand	1,508
Sweden	1,507
Netherlands	1,507
Denmark	1,503
Germany	1,501
Belgium	1,500
Australia	1,497
Switzerland	1,494
Norway	1,490
Czech Republic	1,486
United States	1,485
France	1,481
Portugal	1,476
Austria	1,473

1,300 1,400 1,500 1,600 1,700 1,800

* PISA = Programme for International Student Assessment
** Beijing, Shanghai, Jiangsu and Zhejiang

@StatistaCharts Source: OECD

statista

Amazon Requested Proposals for its second world HQ
Anticipated ~50,000 new jobs; $ Billions in investment

Concept: New HQ2 in Arlington, VA

Detroit 's proposal (2017) was not in the top 20
Amazon's rejection of Detroit based on:
 Lack of mass transit system
 Lack of an educated work force

These Are The Mostly Highly Educated States
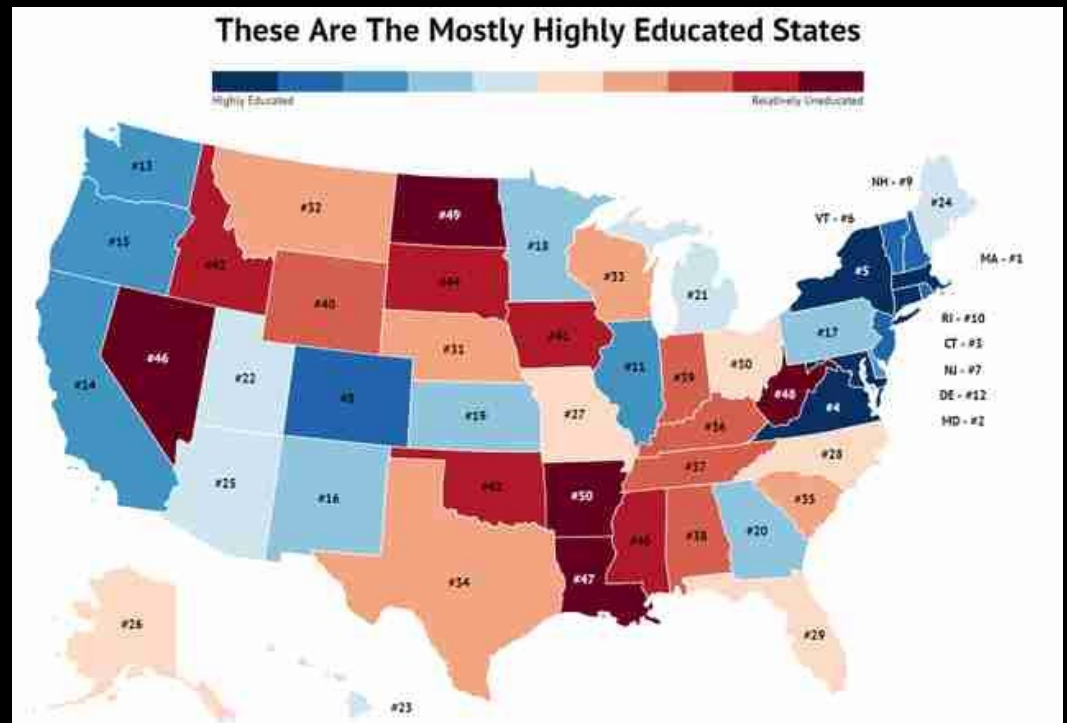
From Carl Sagan, The Demon-Haunted World (1996):

Electronics industry: 80% of applicants can't do 5th grade arithemetic

US losing $ 40 billion / year 'cause workers can't read, write, count or think

US Adults:

63 % unaware than dinosaurs died before first humans

75 % unaware that antibiotics do not kill viruses

57 % unaware that electrons smaller than atoms

50% unaware that earth goes around the sun

Asian students ahead of US students in every subject tested

GLOBAL EDUCATION LEAGUE TABLE

Overall Rank*	Country/Economy	Mathematics Score	Reading Score	Science Score
1st	Shanghai (China)	613	570	580
2nd	Singapore	573	542	551
3rd	Hong Kong	561	545	555
4th	Taiwan	560	523	523
5th	South Korea	554	536	538
12th	Finland	519	524	545
26th	United Kingdom	494	499	514
36th	United States	481	498	497
61st	Jordan	386	399	409
62nd	Colombia	376	403	399
63rd	Qatar	376	388	384
64th	Indonesia	375	396	382
65th	Peru	368	384	373

*Based on 2012 PISA math score   Source: 2012 Program for International Student Assessment, OECD
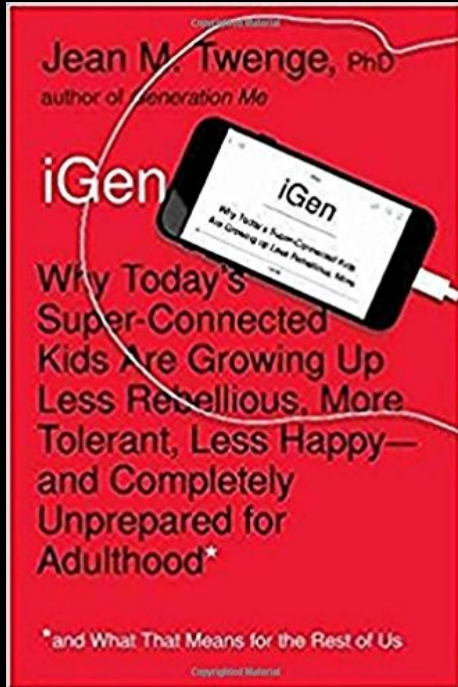
Cell Phones and Behavior

Summary of behavioral changes in the iGen generation from an investigator that has studied teen behavior for more than 3 decades

Strong correlation between negative behaviors / affects and cell phone / social media use.

I'M NEVER WRONG. JUST DIFFERENT LEVELS OF RIGHT.

Rise of Narcissism

LIVING IN THE AGE OF ENTITLEMENT

"Chronicles the obsession that many Americans have with, well, themselves . . . thinking themselves entitled to things they haven't earned: It puts them at a terrible disadvantage in a global marketplace that is, all the time, getting more competitive." —San Francisco Chronicle

The Narcissism Epidemic

JEAN M. TWENGE, PH.D.
AUTHOR OF *GENERATION ME*
and W. KEITH CAMPBELL, PH.D.

WITH A NEW FOREWORD BY THE AUTHORS

It's all about ME

The United States is currently suffering from an epidemic of narcissism. Merriam-Webster's dictionary defines an epidemic as an affliction "affecting ... a disproportionately large number of individuals within a population," and narcissism more than fits the bill. In data from 37,000 college students, narcissistic personality traits rose just as fast as obesity from the 1980s to the present, with the shift especially pronounced for women.
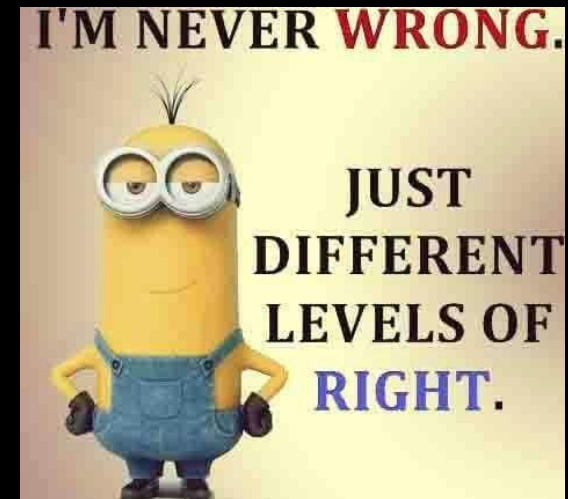
> One of the major problems facing the fresh graduates is their insufficient understanding of basic concepts. The lack of in-depth understanding of technical information, lack of client-handling skills and insufficient knowledge across domains are the major skill gaps in the area.
>
> - Siddarth Bharwani, Vice President, Jetking Infotrain Limited

Average U.S. SAT Scores by Year

Math Score   Reading Score
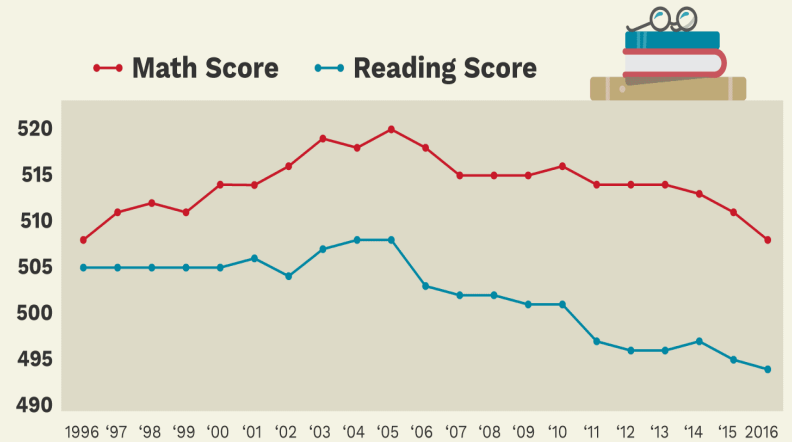
ThoughtCo.

Source: research.collegeboard.org/programs/sat/data

> There are five issues that make a fist of a hand that can knock America out cold. They're lack of jobs, obesity, diabetes, homelessness, and lack of good education.
>
> – will.i.am –
>
> www.PureHappyLife.com

Relative Importance to College Admission
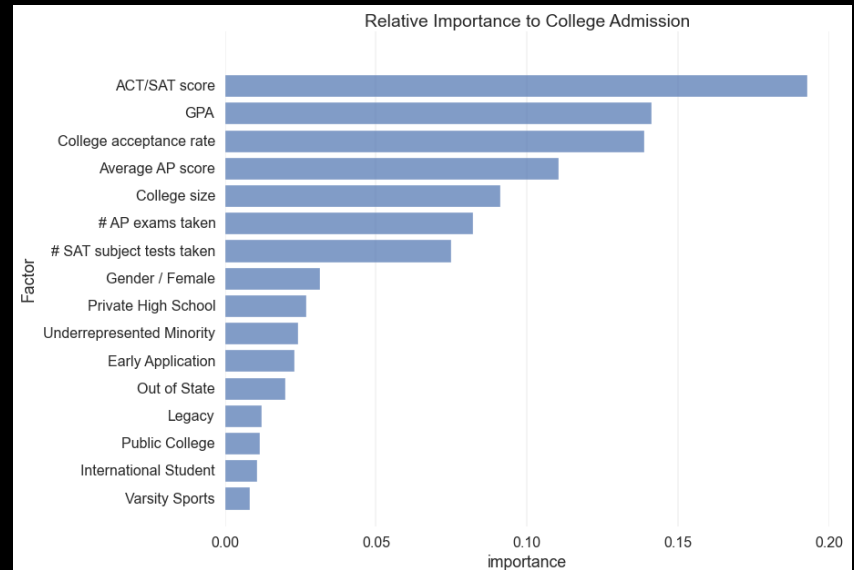
Neil deGrasse Tyson (Science educator extraordinaire):

"Americans overall are bad at science. Scared of math. Poor at physics and engineering. Resistant to evolution. This science illiteracy is a threat to the nation."

"To be scientifically literate is to empower yourself to know when someone else is full of bullshit."
- Neil deGrasse Tyson
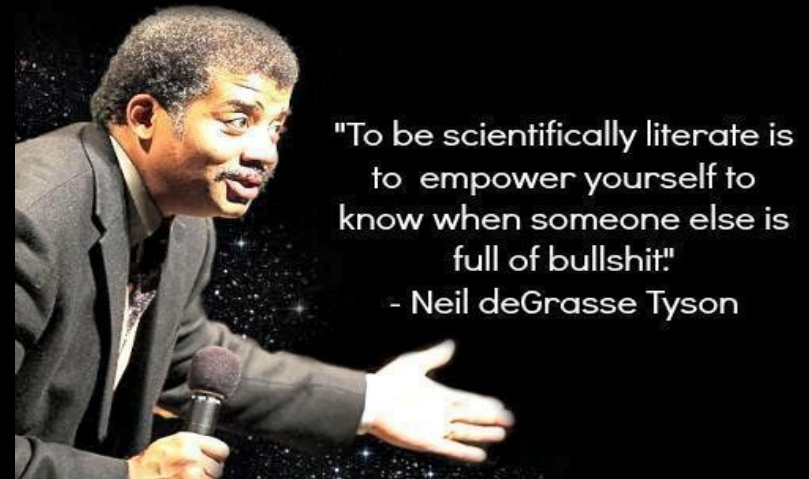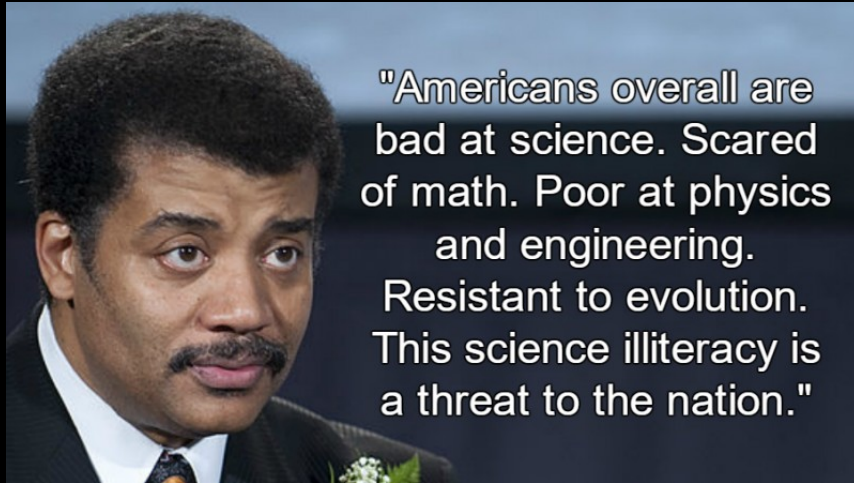
"The good thing about science is that it's true whether or not you believe in it"

"The man who has no sense of history, is like a man who has no ears or eyes."

Neil deGrasse Tyson
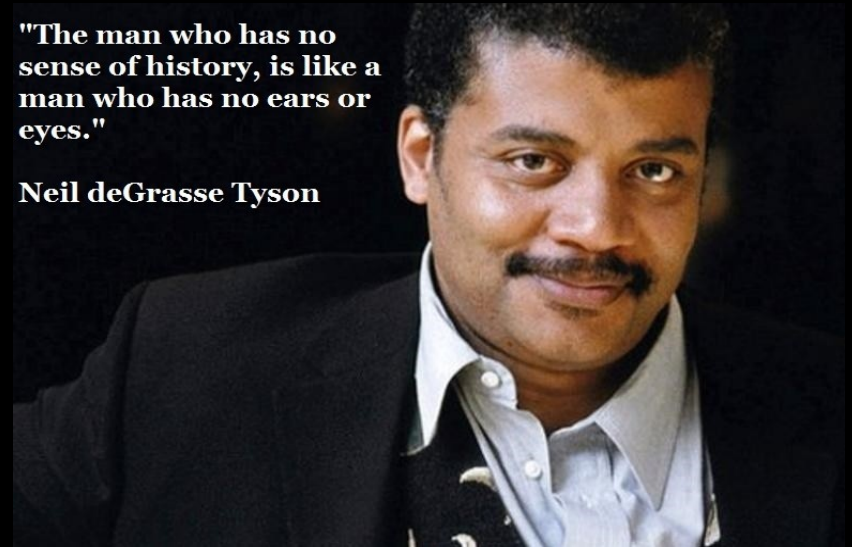
The lack of education and lack of skills don't hurt the unemployed, they hurt America and American business, making us less competitive in the global market.

— Robert Stempel —

AZ QUOTES

Sleep deprivation in pupils taking maths and science tests, aged 9-10

Country	Percentage
United States	73%
New Zealand	
Saudi Arabia	
Kuwait	
Australia	
Turkey	
England	
Chile	
Ireland	
Finland	
Average	46.5%
Malta	
Japan	
Slovakia	
Azerbaijan	
Kazakhstan	12%
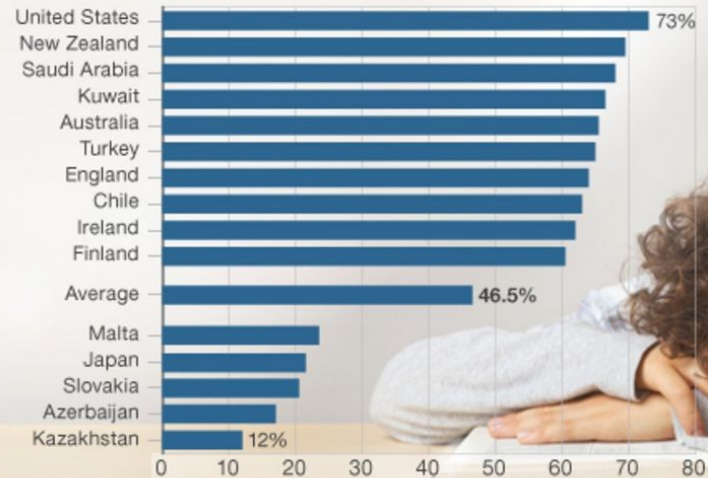
Percentage of pupils in class where learning suffers from lack of sleep, according to teachers, out of 50 countries

Source: Boston College

Thinkstock

MILLIONS of high school students lack access to the basic, fundamental courses in math and science necessary for success in college and career.

1 in 5 high schools do NOT offer ALGEBRA I or higher.

25% of all high school students do not have access to Calculus.

1,549,273 students without access to Biology, Chemistry or Physics.

1 in 4 high schools do NOT offer BIOLOGY or higher.

1,370,825 students without access to Algebra I, Geometry, Algebra II, Advanced Math or Calculus.

Nearly half of high schools do not offer Physics.

ExcelinEd www.ExcelinEd.org | @ExcelinEd
Source: ExcelinEd analysis of US Department of Education 2015-16 Civil Rights Data Collection (CRDC) representing self-reported data from 99.8% of all US schools.

10 CEOs Answer The Question, "What Is The Most Underrated Skill Most Employees Lack?"

1. The ability to write well. I am horrified, and have been for years, at the extent to which college graduates are apparently unable to write a clear, grammatically correct sentence. - David S. Rose

A Significant Number of U.S. Adults Lack Basic Math Skills

Results from an international assessment of basic skills found that 58 million American adults have low skills in working with and using mathematical information (numeracy).

30% Of the adult population

1 in 4 Working adults
LACK BASIC MATH SKILLS
1 in 3 High School graduates

288 Mean score, numeracy skills by country

Japan	FL	BE	NL	SE	NO	DK	SK	CZ	AT	EE	DE	Average	AU	CA	CY	KR	UK	PL	IE*	FR*	United States	IT	Spain
												269									253		246

Among the 23 countries included in the assessment, 20 ranked above the U.S.

*Although Ireland and France have higher average scores than the U.S., their scores are not significantly different from the U.S. Average.

Source: The Programme for the International Assessment of Adult Competencies (PIAAC) assessment, 2012

American Institutes for Research | www.air.org

Employers' Top Priorities For Student Learning Outcomes In College

% saying two- and four-year colleges should place MORE emphasis on helping students develop these skills, qualities, capabilities, knowledge

Skill	%
Effective oral/written communication	89%
Critical thinking/analytical reasoning	81%
Knowledge/skills applied to real world settings	79%
Analyze/solve complex problems	75%
Connect choices and actions to ethical decisions	75%
Teamwork skills/ability to collaborate	71%
Ability to innovate and be creative	70%
Concepts/developments in science/technology	70%

11   Raising The Bar – October/November 2009 – Hart Research *for* A|A C&U

Popular reasons cited that people lack critical thinking skills (U.S.)

Why people lack critical thinking skills
- Modern technology inhibits critical thinking
- Changing societal norms have devalued these skills
- The educational system is flawed
- Decreased parental involvement during childhood
- The same reasons they have always lacked these skills

Number of respondants

Reasons cited that people lack critical skills
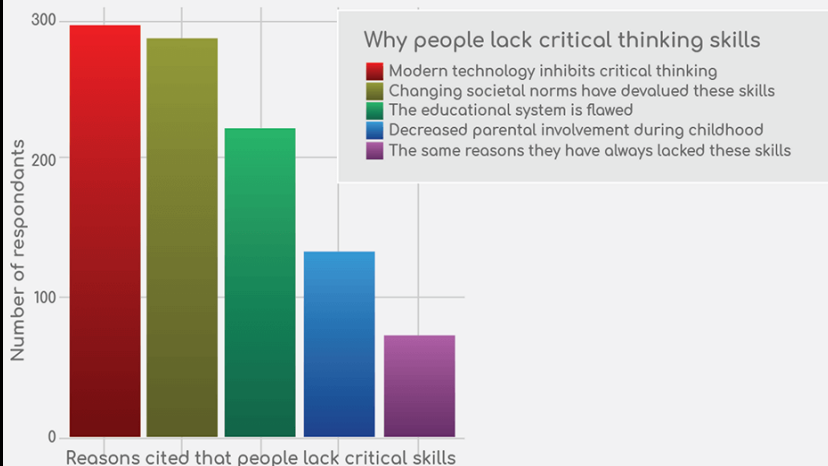
Employers rate candidate soft skills/qualities in order of importance

1. Ability to verbally communicate with persons inside and outside the organization
2. Ability to work in a team structure
3. Ability to make decisions and solve problems
4. Ability to plan, organize and prioritize work
5. Ability to obtain and process information
6. Ability to analyze quantitative data
7. Technical knowledge related to the job
8. Proficiency with computer software programs
9. Ability to create and/or edit written reports
10. Ability to sell or influence others

Source: Job Outlook 2013
Courtesy of the National Association of Colleges and Employers

The Impact of AI and Automation on Job Displacement

47 percent

of the U.S. labor force has the potential to be automated

according to a study done by Oxford University researchers

which is about 73,302,140 out of 155,962,000 U.S. jobs.

each person represents 10 million workers

MANEMP/PAYNSA

U.S. Manufacturing Jobs as a Percentage of All Jobs

(Thous. of Persons/Thous. of Persons)

Shaded areas indicate US recessions.
2012 research.stlouisfed.org

FRED
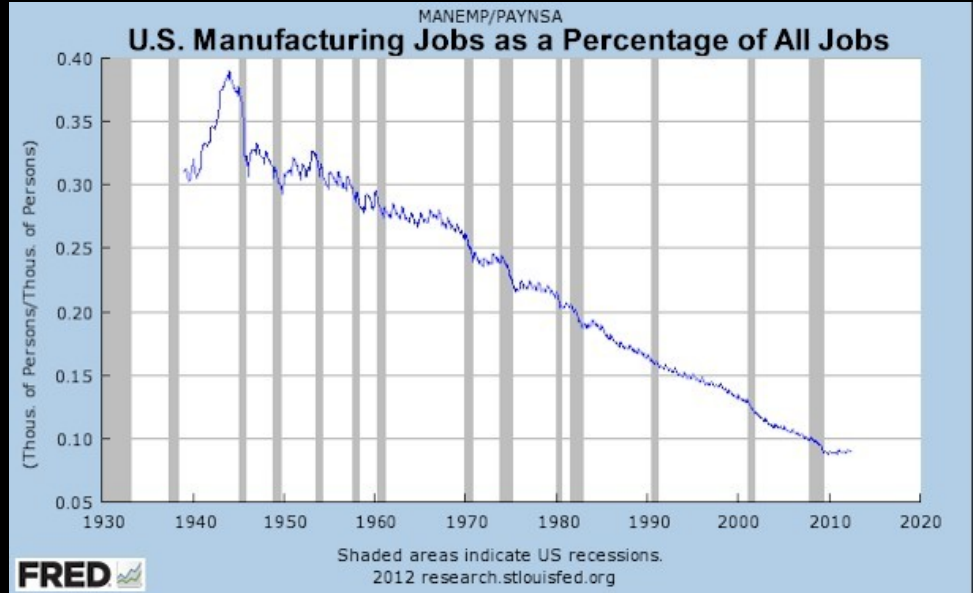
Automation Could Eliminate 73 Million U.S. Jobs By 2030

Potential number of displaced jobs due to automation by 2030*

China	India	United States	Japan	Mexico	Germany
236m	120m	73m	30m	18m	17m

@StatistaCharts

* Rapid automation scenario.
Source: McKinsey

Forbes **statista**

AI will change human employment opportunities

Automated for the people
Automation risk by job type, %

Job type	Risk
Food preparation	
Construction	
Cleaning	
Driving	
Agricultural labour	
Garment manufacturing	
Personal service	
Sales	
Customer service	
Business administration	
Information technology	
Science & engineering	
Healthcare	
Hospitality & retail management	
Upper management & politics	
Teaching	
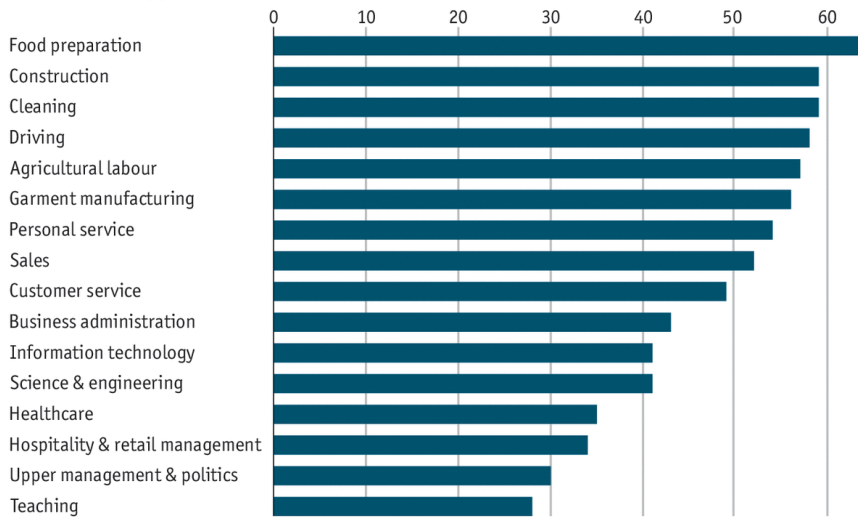
Source: OECD

Economist.com

Clerks replaced by self-serve kiosks

Healthcare execs rate AI as most disruptive tech in industry

Technology	%
Artificial intelligence	31%
Internet of things	27%
3-D printing	17%
Robotics	12%
Augmented reality	8%
Blockchain	3%
Virtual reality	1%
Drones	0%
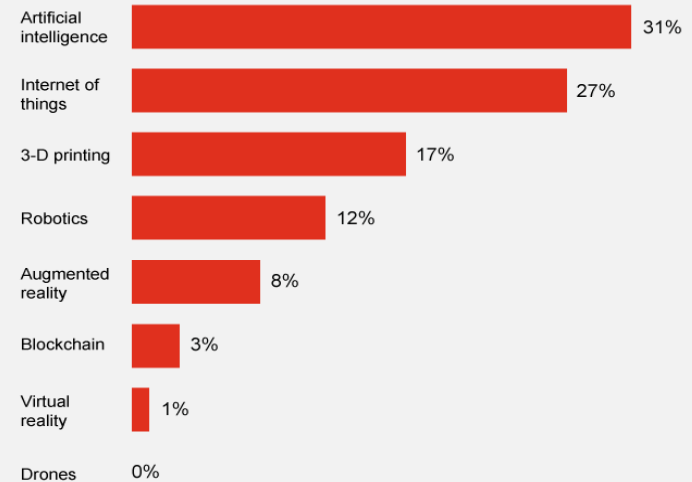
Source: PwC, 2017 Global Digital IQ® Survey

PwC | pwc.com/nexintech

AI is changing human food employment opportunities

AI Robot Cars replacing Human Drivers

Impact of Automation on Services Jobs – Likely Scenario

Legend:
- Low Skilled Services Jobs
- Medium Skilled Services Jobs
- High Skilled Services Jobs

IT Services and BPO Employees (Millions)

	2015	2021
Low Skilled	8.8	6.1
Medium Skilled	4.8	5.2
High Skilled	1.7	2.7

Impact
- Low skilled jobs falling by 30%
- Medium skilled jobs increasing by 8%
- High skilled jobs increasing by 56%
- Total jobs falling by 9%

Outlook
- Low skilled jobs phasing out to automation through RPA/Autonomics
- Starting to affect medium skills as cognitive computing augments these skills
- Increasing demand for high skilled positions involving creative problem solving, analytics and critical thinking

© 2016 HfS Research

Young people are more at risk of job automation

% of people affected, by age

Age	%
60-65	~7.5
55-59	~6
50-54	~2.5
45-49	~5
40-44	~2.5
35-39	~1.5
30-34	~4.5
25-29	~9
20-24	~16
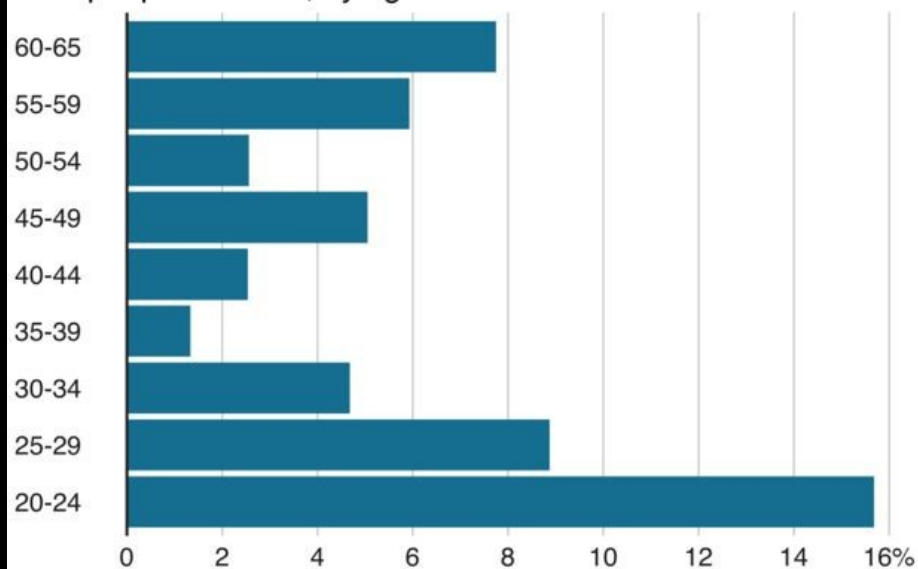
Source: Office for National Statistics. Data for England in 2017

BBC

% of existing jobs at potential risk of automation

- Low education
- Medium education
- High education

- Wave 1 (to early 2020s)
- Wave 2 (to late 2020s)
- Wave 3 (to mid-2030s)
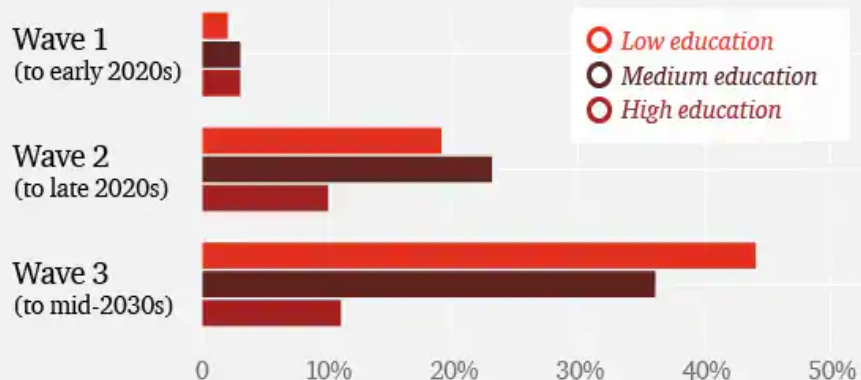
Source: PwC estimates based on OECD PIAAC data (median values for 29 countries)

IMMEDIATE RISK FROM AUTOMATION

No. of workers (M)

	No. of workers (M)
Cooks and servers	4.3
Cleaners	3.8
Movers and warehouse workers	2.4
Retail salesperson	4.6
Truck drivers	1.8
Construction laborers	1.2
Nurses and health aides	6.9

■ High ■ Medium ■ Low
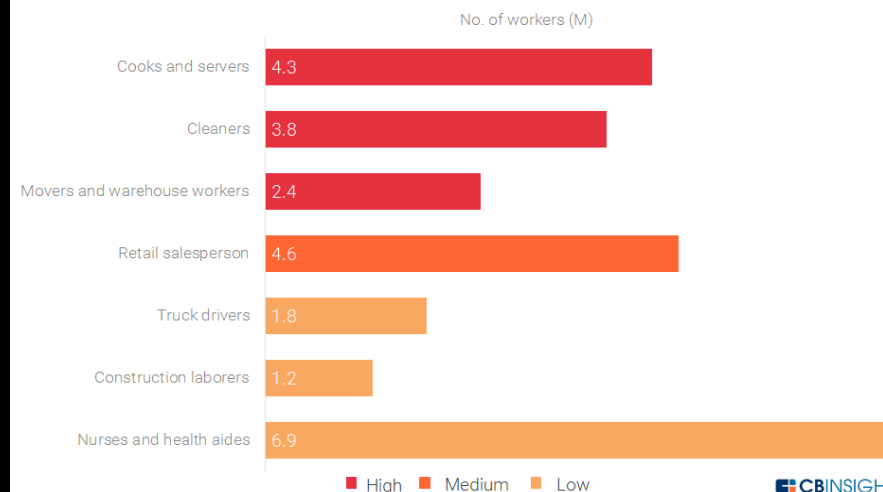
CB INSIGHTS

Covid-19 Testing – Egypt-2021

From CNN – April 27, 2021

Grace – First Android Nurse

From CNN – August 19, 2021

Artificial Intelligence Job Analysis

2.535.009 — AI, automation and robotics jobs will be created by early 2030's

13.375.363 — jobs are at risk from automation replacement by early 2030's

newly created positions can only fill 19% of the jobs lost to robotics

---

Top 10 skills

	in 2020		in 2015
1.	Complex Problem Solving	1.	Complex Problem Solving
2.	Critical Thinking	2.	Coordinating with Others
3.	Creativity	3.	People Management
4.	People Management	4.	Critical Thinking
5.	Coordinating with Others	5.	Negotiation
6.	Emotional Intelligence	6.	Quality Control
7.	Judgment and Decision Making	7.	Service Orientation
8.	Service Orientation	8.	Judgment and Decision Making
9.	Negotiation	9.	Active Listening
10.	Cognitive Flexibility	10.	Creativity

Source: Future of Jobs Report, World Economic Forum

AUTOMATION IN THE NEWS

MORE THAN 100,000 LEGAL ROLES TO BECOME AUTOMATED — FT FINANCIAL TIMES — March 15, 2016

THE ASSOCIATED PRESS WILL USE AUTOMATED WRITING TO COVER THE MINOR LEAGUES — Poynter. A global leader in journalism — June 30, 2016

THE FUTURE OF FINANCE: MORE DATA, FEWER PEOPLE — Institutional Investor — May 2, 2017

YOUR NEXT JOB INTERVIEW COULD BE WITH A RECRUITER BOT — CNN tech — May 16, 2017

AUTOMATION, AI, AND THE FUTURE OF AUDIT AND COMPLIANCE — COMPLIANCE WEEK — THE LEADING INFORMATION SERVICE ON CORPORATE GOVERNANCE, RISK, AND COMPLIANCE

Bookkeepers have a **97.6%** chance of being automated.
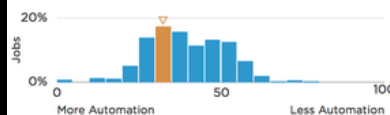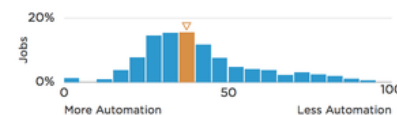
How do we know this? Some aspects of a job are easier to automate than others. It all depends on the tasks. Look at the orange bars to see how Bookkeepers compare with other professions...
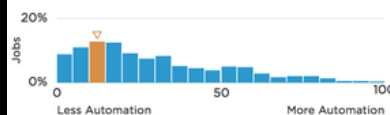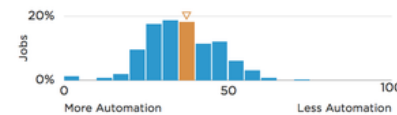
Do you need to come up with clever solutions?

Are you required to personally help others?

Does your job require you to squeeze into small spaces?

Does your job require negotiation?

The Realities a Resume Faces in 2018

6 seconds is the **average amount of time** recruiters look at a resume

59% of recruiters reject candidates due to **poor grammar** or a **spelling error**

64% of staffing firms **use an ATS** to screen incoming resumes

ATS= Automatic Tracking System

How AI will affect the job market

Predicted net job creation by sector (2017-2037)

Health and social work
Professional, scientific and technical
Information and communication
Education
Accommodation and food services
Administrative and support services
Other sectors
Wholesale and retail trade
Construction
Financial and insurance activities
Public administration and defence
Transportation and storage
Manufacturing

-30 -20 -10 0 10 20 30%

pwc   GUILD

YOUNG PEOPLE NEED SKILLS AND EXPERIENCE FOR JOBS OF THE FUTURE, NOT THE PAST

70% of young people currently enter the workforce in jobs that will be radically affected by **AUTOMATION**

OCCUPATIONS: **ENTRY LEVEL** roles for young people are **DISAPPEARING**

TRAINING: **60%** of students are being trained in jobs that will be radically **CHANGED BY AUTOMATION**

DIGITAL LITERACY: **MORE THAN HALF** of Australian workers will need to be able to use, configure or build digital systems in the next 2-3 years

CODE

fya

"I tell people that AI is a wave, and it's here now. You are either going to surf that wave or it's going to crash on you. It's not going to be 10 years from now — it's today."

Corporate job openings attract
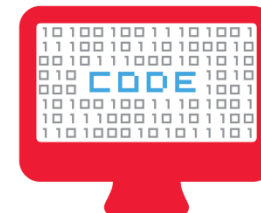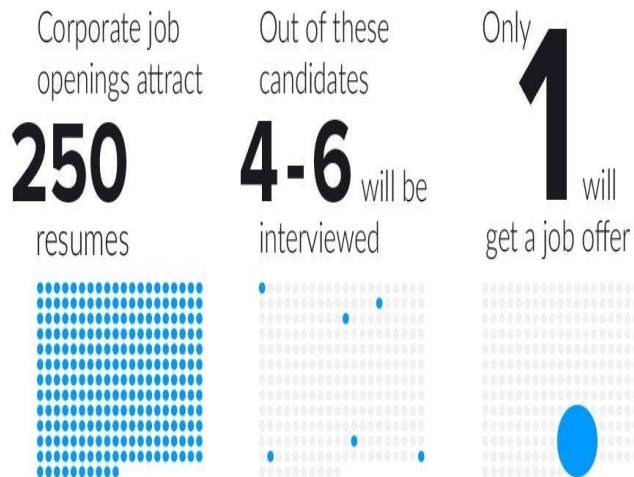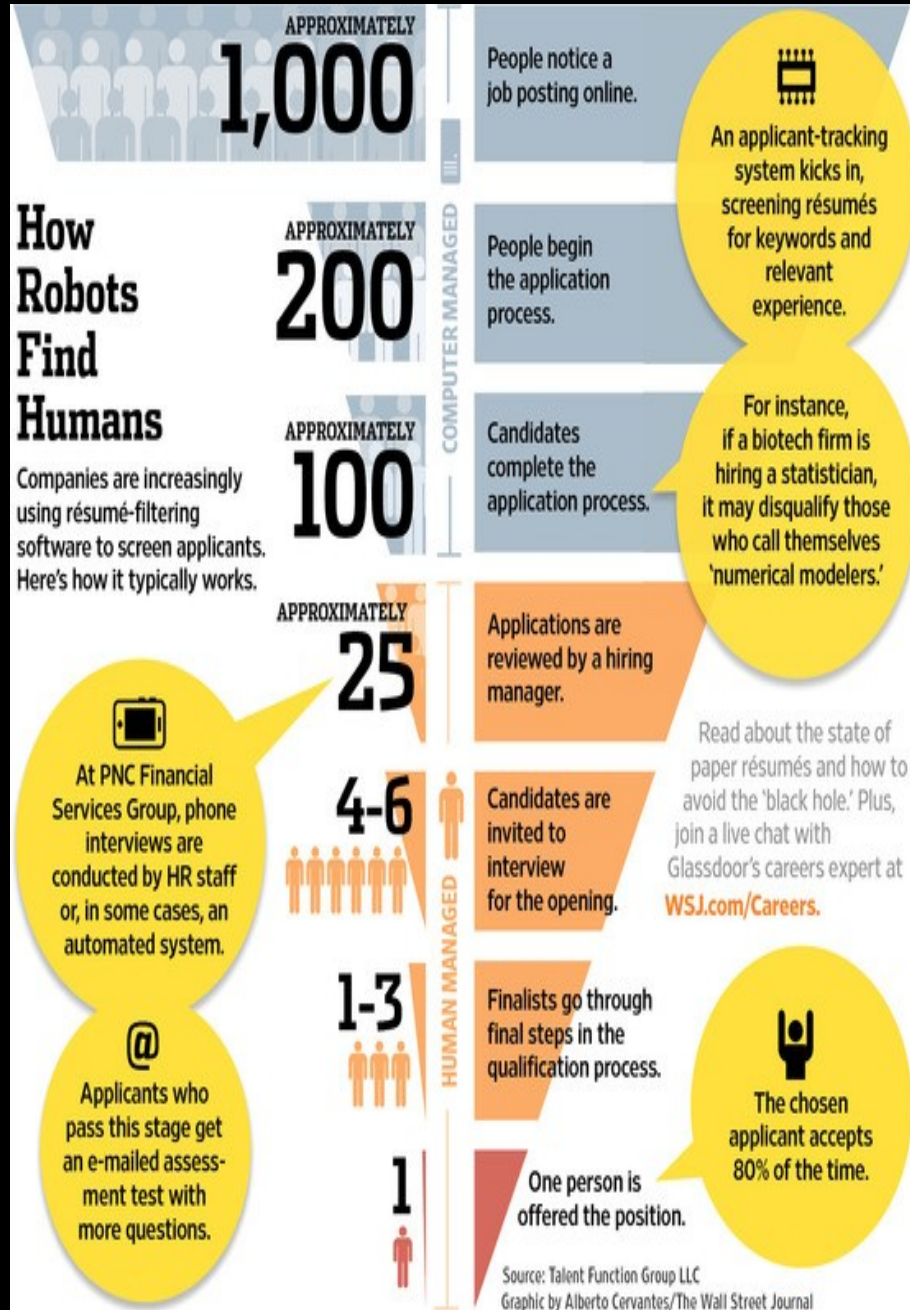
250
resumes

Out of these candidates

4-6 will be
interviewed

Only **1** will
get a job offer

Source: Glassdoor

How Robots Find Humans

Companies are increasingly using résumé-filtering software to screen applicants. Here's how it typically works.

COMPUTER MANAGED

APPROXIMATELY **1,000**
People notice a job posting online.

An applicant-tracking system kicks in, screening résumés for keywords and relevant experience.

APPROXIMATELY **200**
People begin the application process.

For instance, if a biotech firm is hiring a statistician, it may disqualify those who call themselves 'numerical modelers.'

APPROXIMATELY **100**
Candidates complete the application process.

HUMAN MANAGED

APPROXIMATELY **25**
Applications are reviewed by a hiring manager.

At PNC Financial Services Group, phone interviews are conducted by HR staff or, in some cases, an automated system.

4-6
Candidates are invited to interview for the opening.

Read about the state of paper résumés and how to avoid the 'black hole.' Plus, join a live chat with Glassdoor's careers expert at **WSJ.com/Careers.**

@ Applicants who pass this stage get an e-mailed assessment test with more questions.

1-3
Finalists go through final steps in the qualification process.

1
One person is offered the position.

The chosen applicant accepts 80% of the time.

Source: Talent Function Group LLC
Graphic by Alberto Cervantes/The Wall Street Journal

G20 NATIONS GDP PPP – 2019 FORECAST

GDP PPP, current prices (billions of international dollars) | GDP PPP Share

Country	GDP PPP	Share
China	27,449	26.1%
United States	21,482	20.4%
India	11,413	10.8%
Japan	5,807	5.5%
Germany	4,555	4.3%
Russia	4,345	4.1%
Indonesia	3,753	3.6%
Brazil	3,524	3.3%
United Kingdom	3,145	3.0%
France	3,081	2.9%
Mexico	2,696	2.6%
Italy	2,474	2.3%
Turkey	2,373	2.3%
South Korea	2,242	2.1%
Saudi Arabia	1,943	1.8%
Canada	1,931	1.8%
Australia	1,384	1.3%
Argentina	923	0.9%
South Africa	819	0.8%

G20 Economies Share:
Advanced Economies: 44%
Emerging Economies: 56%

Total GDP PPP : $105,339 billion   Total GDP PPP Share : 100%

Data Source: IMF World Economic Outlook, October 2018   Data Analysis by: MGM Research
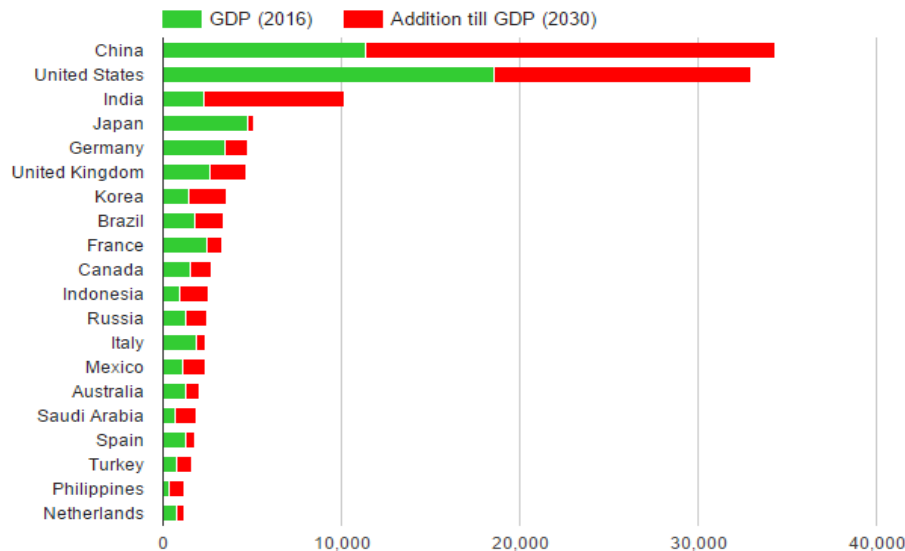
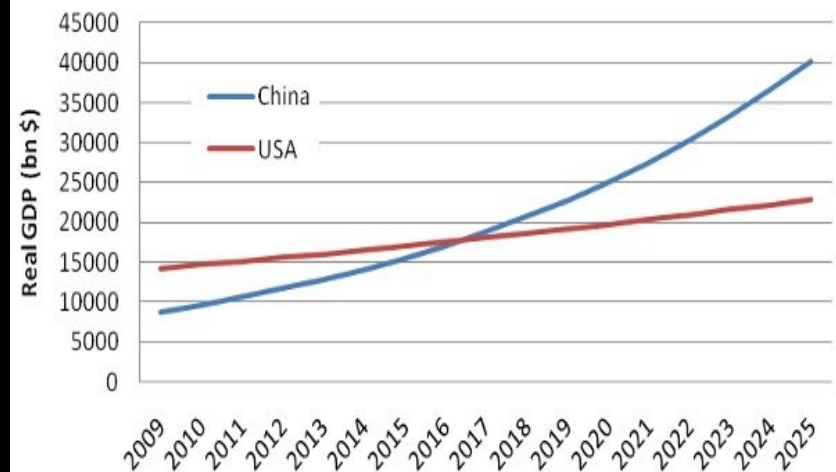**Emerging markets will dominate the world's top 10 economies in 2050 (GDP at PPPs)**

	2016	2050	
China	1	1	China
US	2	2	India
India	3	3	US
Japan	4	4	Indonesia
Germany	5	5	Brazil
Russia	6	6	Russia
Brazil	7	7	Mexico
Indonesia	8	8	Japan
UK	9	9	Germany
France	10	10	UK

☐ E7 economies   ☐ G7 economies

Projected GDP Ranking 2030

GDP (2016)   Addition till GDP (2030)

China, United States, India, Japan, Germany, United Kingdom, Korea, Brazil, France, Canada, Indonesia, Russia, Italy, Mexico, Australia, Saudi Arabia, Spain, Turkey, Philippines, Netherlands

China vs. USA #1: Linear Extrapolation of Current Trends

China
USA

US Share of World Economy is Declining

GDP at Purchasing Power Parity (PPP), share of the world total, percent

BRICS' share of the world GDP surpassed that of the Euro Area combined with the U.S. in 2015

— BRICS — United States — Euro Area ······ EA12 (fixed)

macroview.eu
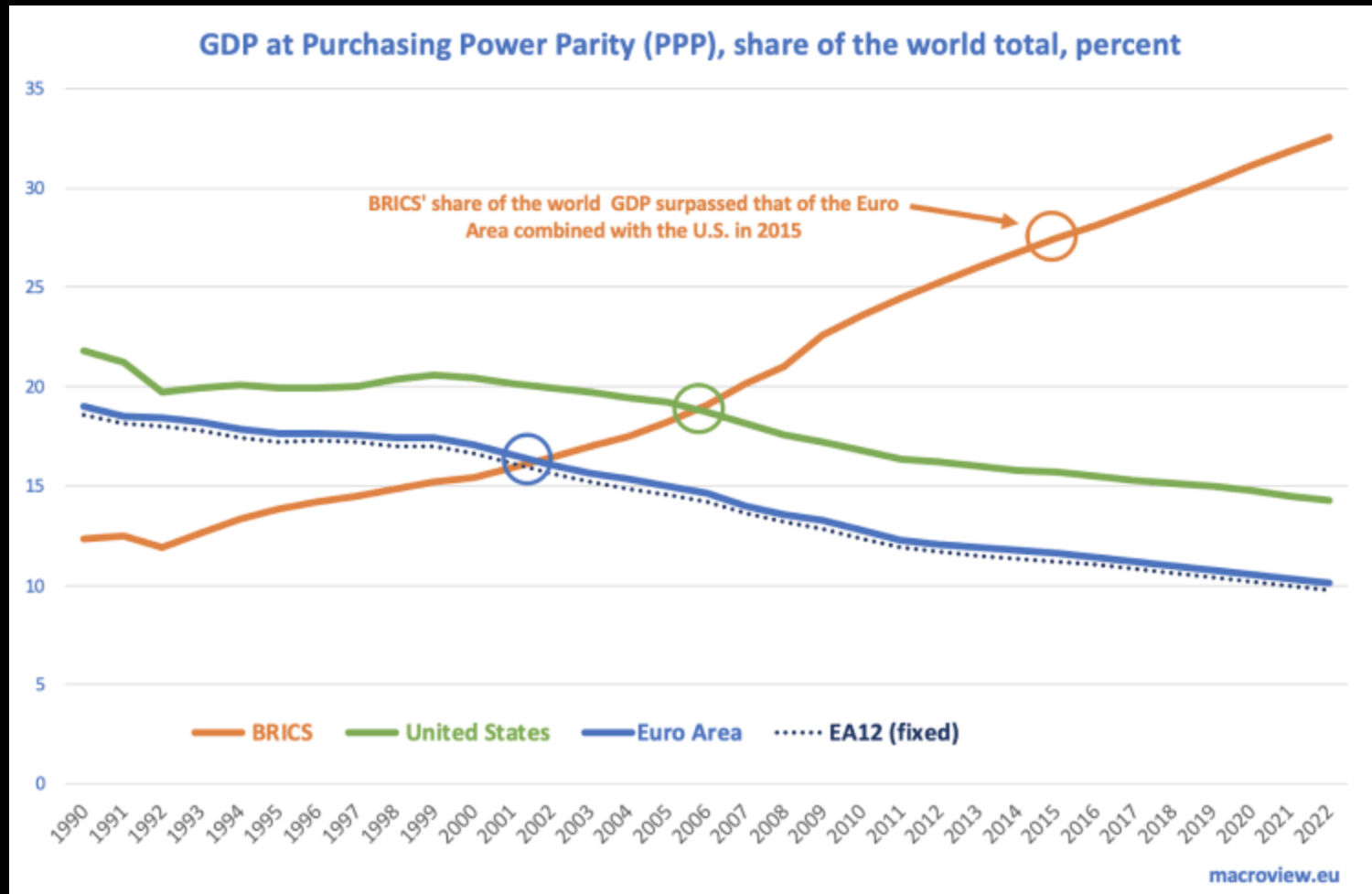
BRICS: Brazil, Russia, India, China, and South Africa

World Literacy Council (2021)

"Education is the most powerful weapon we can use to change the world."

— Nelson Mandela